Release Notes for Linux Host Drivers, V3.5.1-Linux

These release notes document information about the current release of the Oracle's Xsigo Linux and CentOS host drivers.

Additional release notes exist for:

- Oracle's Xsigo Windows host drivers
- Oracle's Xsigo Fabric Director and Oracle's Xsigo Fabric Manager

These notes contain the following sections:

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Overview

Oracle's Xsigo Fabric Director is a service-oriented platform that interconnects data-center resources based on application demands.

Customers and partners are requested to send comments and report bugs to Xsigo by filing a customer case through the Xsigo Technical Support web portal (http://support.xsigo.com). Xsigo is fully committed to responding to all feedback regarding our product and greatly appreciates customer involvement. If you need to contact Xsigo Customer Support, you can facilitate your interaction with Customer Support by gathering some troubleshooting information. For more information, see Technical Support Contact Information on page 10.

What's New in this Release

Release 3.5.1-Linux host drivers have been redesigned to provide more robust functionality and additional hooks for future enhanceability.

Also, support for Red Hat 4 Update 8 hosts is supported in this version of Linux host driver.

System Requirements

This section documents the system requirements for this version of host drivers.

Supported OS Levels

The following 32-bit and 64-bit architectures are tested in this release:

- RHEL 4 Update 8
- RHEL 5 Updates 2, 3, 4, and 5

RHEL 5 GA, and RHEL 5 Update 1 OSes are supported through Xsigo host driver version 2.7.1 and earlier.

Fabric Manager can run on a Red Hat Enterprise Linux 4 or 5 host.

Supported Firmware Version for ConnectX HCAs

Version 3.5.1-Linux supports ConnectX HCAs with the requirement that the firmware version for the HCA is 2.6.0 or higher.

System Limitations and Restrictions

This section documents system limitations and restrictions for this version of Linux host driver.

Limitations on the Length of Virtual Resource Names Under Linux

With Linux operating systems, the names of virtual resources are restricted to the following lengths:

- vNICs: 10 characters (maximum)
- vHBAs: 15 characters (maximum)
- Server Profiles: 31 characters (maximum)

If you violate the length restrictions, vNICs will not work.

Virtual Resources Supported per Server

On Linux servers with 2 GB of memory, 16 vNICs and 16 vHBAs per server has been tested.

User Guides

User guides are available on CD for shipments to new customers, and by download from the Xsigo Technical Support site.

Xsigo Systems provides the following Fabric Director product documentation in PDF format:

- *Fabric Director Hardware and Host Drivers Installation Guide*
- *XgOS Software Upgrade Guide*
- *XgOS Command-Line User Guide*
- *XgOS Remote Booting Guide*
- *Fabric Manager User's Guide*
- *XgOS vNIC Switching Configuration Guide*

You can download these manuals by going to the Xsigo Support page (www.xsigo.com/support) and clicking the "Documentation" tab on the toolbar at the top of the page. You will need a login and password before downloading the manuals. See page 10.

Documentation Erratum and Addition

The following sections contain corrected and additional text for the Xsigo technical documentation.

Documentation Erratum

The following sections contain fixes for errors in the Xsigo technical documentation.

Corrected Text for Linux Firmware and Option ROM Updates

Note the following correction to the “Firmware and Option ROM Levels” chapter of the *Remote Booting Guide*.

In the “Linux Firmware and Option ROM” section, the procedure is incorrect. The procedure instructs you to run the Option ROM upgrade tool (`xg_config`) first, then load the new HCA firmware by running an RPM. These steps are reversed because the `xg_config` tool is actually in the RPM.

If you are upgrading the HCA firmware and Option ROM for a Linux server, use the following corrected text:

Step 1 Log in into the Linux host server as root.

Step 2 Upgrade the Xsigo HCA firmware package on the server. For example:

```
rpm -Uvh <xsigo-hca-firmware_number.i386.rpm>
```

Note: Replace `xsigo-hca-firmware_2.6.6.i386.rpm` with the xsigo firmware for your server. Supported host drivers for each operating system are listed in the release notes.

This step unpacks the `xg_config` tool, which you can use to update the HCA firmware and Option ROM.

Step 3 Run `xg_config` to view the firmware and option ROM levels.

```
/opt/xsigo/bin/xg_config
##########################################################################
# Main menu
##########################################################################

Selected card:
   Node GUID          : '0002:c902:0020:4934'
   Board ID           : 'MT_0150000001'
   CA type            : 'MT25208'
   Firmware version   : '5.3.0'
   Hardware version   : 'a0'
   Option ROM version : 'XgBoot Version 2.7.7'
```

Version 2.8.9 of the XgOS supports the following firmware levels:

Single Port HCA: 1.3.0

Dual Port HCA: 5.3.0

Connect-X: Firmware version 2.8.0 or higher

If your firmware and XgBoot versions are the same as listed above, you can skip Step 4.

Step 4 Run `xg_config` to upgrade the firmware and option ROM.

```
/opt/xsigo/bin/xg_config
##########################################################################
# Main menu
##########################################################################

Selected card:
   Node GUID          : '0002:c902:0020:4934'
   Board ID           : 'MT_0150000001'
   CA type            : 'MT25208'
   Firmware version   : '5.3.0'
   Hardware version   : 'a0'
   Option ROM version : 'XgBoot Version 2.7.7'

1) Flash HCA Firmware
2) Flash HCA Firmware + Option ROM
3) Flash Option ROM
4) Change selected card
0) Quit
Select option>
```

If you are using SAN Boot or might decide to in the future, select option 2. Otherwise, select option 1.

In the following example, option 2 was selected:

```
##########################################################################
# Flash HCA Firmware + Option ROM Menu
##########################################################################

Selected card:
   Node GUID          : '0002:c902:0020:4934'
   Board ID           : 'MT_0150000001'
   CA type            : 'MT25208'
   Firmware version   : '5.3.0'
   Hardware version   : 'a0'
   Option ROM version : 'XgBoot Version 2.7.7'

1) 5.3.0 (XgBoot Version 1.5)
2) 5.1.400 (XgBoot Version 1.5)
0) Return to previous menu
Select firmware to use>
*************************************************************
```

Step 5 Select the most recent firmware (the one displayed first). The one you select will be loaded into memory when the server reboots.

You will need to reboot for the firmware upgrade to take effect. However, you can wait to reboot until you have upgraded the host drivers.

Documentation Addition

The following additional text was not included in the Xsigo technical documentation when it was last published.

Additional Text for Linux SAN Boot

Note the following additional information for “Modifying the initrd for Multipathing” in the Linux SAN Boot chapter of the *Remote Booting Guide*:

To successfully complete the procedure, you must change /etc/fstab to point to the multipath devices before rebooting the server. By changing the /etc/fstab and putting the modified initrd on the SAN before the server reboots, the server will read the correct information when it SAN Boots. If you do not change /etc/fstab before rebooting the server, some file system checks can fail.

Supported Host Drivers

Downloading Supported Drivers

You need access to the Xsigo support site to download the drivers. To get the drivers:

Step 1 Log in to the support portal (http://support.xsigo.com/support/) with a user name and password.

Step 2 Navigate to the SOFTWARE tab and select CURRENT RELEASE.

Step 3 On that page, select the driver you need. If the driver you need is not present, contact Xsigo Customer Support as documented in Technical Support Contact Information on page 10.

Linux Host Drivers

This release supports the following Linux and CentOS host drivers. The host drivers are listed for Red Hat Enterprise Linux, but the same host drivers also are used for CentOS and Xsigo’s initial-release support of Citrix XenServer 5.0.

Note

When upgrading Linux and CentOS host drivers, the server must be rebooted after the new RPM is installed.

Red Hate Enterprise Linux 4 Update 8

- xsigo-hostdrivers-kmod-2.6.9_89.0.25.ELsmp.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.9_89.0.25.ELsmp.3.5.1.LX-1.x86_64.rpm

Red Hat Enterprise Linux 5 Update 2

- xsigo-hostdrivers-kmod-2.6.18_92.el5.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.18_92.el5PAE.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.18_92.el5.3.5.1.LX-1.x86_64.rpm

Red Hat Enterprise Linux 5 Update 3

- xsigo-hostdrivers-kmod-2.6.18_128.el5.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.18_128.el5PAE.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.18_128.el5.3.5.1.LX-1.x86_64.rpm

Red Hat Enterprise Linux 5 Update 4

- xsigo-hostdrivers-kmod-2.6.18_164.el5.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.18_164.el5PAE.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.18_164.el5.3.5.1.LX-1.x86_64.rpm

Red Hat Enterprise Linux 5 Update 5

- xsigo-hostdrivers-kmod-2.6.18_194.3.1.el5.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.18_194.el5.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.18_194.el5PAE.3.5.1.LX-1.i386.rpm
- xsigo-hostdrivers-kmod-2.6.18_194.3.1.el5.3.5.1.LX-1.x86_64.rpm
- xsigo-hostdrivers-kmod-2.6.18_194.el5.3.5.1.LX-1.x86_64.rpm

Known Problems

Table 1 lists known problems in the Xsigo Linux host drivers for this version.

Table 1 Known Problems in 3.5.1-Linux

Number	Description
9953	When using Linux, an HA VLAN does not show the IP address on the secondary VLAN.
10748	Downgrading Linux Hosts from XgOS 2.6.6 to XgOS 1.5.X requires patching the ib_mthca.ko file. For more information, see Limitations on the Length of Virtual Resource Names Under Linux on page 3.

11108	When using iSCSI boot, be certain that the server does not shut down the network during a reboot. This can be accomplished by performing the following commands on the server (once only):
	`chkconfig --level 06 network off`
	`rm /etc/rc0.d/*network`
	`rm /etc/rc6.d/*network`
	Further, the **`reboot`** command will sometimes hang before fully rebooting. To avoid this problem, use the **`shutdown -r`** command to reboot the system.

Table 1 (continued) Known Problems in 3.5.1-Linux

Number	Description
11121	When using RHEL4 and booting from an iSCSI disk, and: • using direct mount with an unknown device name • having other disks available from a vhba • a root=LABEL= kernel argument specifying an iSCSI disk The kernel may panic when it fails to find a superblock in a mount command. The solution is fix the iSCSI configuration to use the correct LABEL= direct mount using the command: **set server-profile foo iscsi-boot** <vnic> <target> **mount direct LABEL=**<label>
11163	When booting from an iSCSI disk using RedHat EL 4 (all updates) it is possible that the kernel can either hang or crash while initializing hardware during the execution of /sbin/init. This is after the initrd has completed. This appears to be an instability in the RHEL4 iSCSI daemon or kernel modules. The issue does not occur on RHEL5 where there is a new iSCSI stack (openiscsi). To workaround this issue, power cycle the server.
11168	In situations where the Linux iSCSI subsystem finds multiple paths to the same LUN, you cannot use partition labels for mounting file systems. The system will print an error during boot indicating that there are duplicate labels. For example: `mount: LABEL=/ duplicate - not mounted`
11183	On rare occasions during iSCSI boot, the server hangs in the GRUB bootloader. To resolve this issue, power cycle the server.
11210	When running a server that is booted from an iSCSI disk you might experience a kernel crash on reboot. This only occurs when using the **reboot** command. It is caused by the shutdown procedures killing the iSCSI daemon. To avoid this problem use the **shutdown -r now** command instead of reboot.
11225	On a default installation of Red Hat 5, various error messages are present during iSCSI boot. In order to avoid these messages, upgrade the IB modules with the Xsigo-provided kernel-ib RPM, and disable the iscsi and iscsid services with chkconfig.
11250	When installing an iSCSI boot volume in situations where the Red Hat installer discovers the same LUN more than once, the Red Hat installer for RHEL 4U5 might complete the installation but leave the disk in a condition where it cannot be mounted. To work around this issue, shut down all but one interface on the target during the installation so that only one path is available to the installer.
11430	Sometimes two different SAN Boot vHBAs can be configured in the same Server Profile even though each Server Profile should have only one SAN Boot vHBA. If two SAN Boot vHBAs exist in a Server Profile and you want to change the SAN Boot vHBA for a Linux server, you must first remove the existing SAN Boot configuration by issuing the **set server-profile** <name> **sanboot none**

Table 1 (continued) Known Problems in 3.5.1-Linux

Number	Description
11575	On rare occasions, after an IB cable is removed, one or more vHBAs might fail to come up to operational state “up”. To workaround this problem: Step 1 Log in to the Fabric Director. Step 2 Delete the vHBA: **`remove vhba`** `<name>` Step 3 Recreate it: **`add vhba`** `<name>` Step 4 Set the vHBA’s parameters: **`set vhba`** `<name> <parameters>`
11594	A rare problem can occur on RHEL 4 U4 hosts configured with four chassis-level HA vNICs that prevents the vNICs from coming completely online. During testing, this rare problem was observed when a data-plane outage was triggered during an upgrade. When the upgrade completed, the four vNICs (about half of the total number configured) were in Port Link State Down. Other vNICs did come up. To workaround this problem, set the affected vNICs to admin state down, then up: Step 1 Issue **`set vnic`** `<vnicname.serverprofile>` **`down`** Step 2 Issue **`set vnic`** `<vnicname.serverprofile>` **`up`**
11827	During scalability testing, a problem prevented a Linux host server with one vHBA from detecting 8 targets with 512 LUNs. When the problem occurred, only 7 targets and 240 LUNs were discovered.
12407	On Linux 5 hosts (GA and any update) issuing the **`system cold-restart`** command repeatedly numerous times can prevent the vNIC queue pairs between the server and Fabric Director from connecting after the Fabric Director comes back online. The failure to connect queue pairs was shown as soon as the 7th cold restart in a row, but can occur at a random number of intervals afterward. You can work around this issue by setting the affected vNIC(s) down, then up again. For example: **`set vnic`** `<name>` **`down`** **`set vnic`** `<name>` **`up`**
12719	On rare occasions a problem can occur that causes queue pairs to remain disconnected after a RHEL 4 U4 server and Fabric Director are simultaneously powered down and left powered off for over an hour. In this situation, when you powered the Fabric Director and the server back on, you would expect reconnection to occur and queue pairs to be up. The problem occurred in a dual-chassis configuration with 5 chassis level HA vNICs configured on 10GE modules, and was observed very rarely.
13880	For iSCSI Booting on Red Hat 5 update 2, update3, and update 4, the **`xg-insert-dd -iscsiboot=`** option cannot be used. Attempting to use this tool with these versions of RHEL causes the following error to occur, and terminates the install: `libutil.so.1: cannot open shared object file` The **`xg-insert-dd -iscsiboot=`** option is not supported for iSCSI Booting any Red Hat EL server. Do not use the **`-iscsiboot=`** option for Red Hat EL servers.

Fixed Problem

Table 1 lists known problems in the Xsigo Linux host drivers for this version.

Table 2 Fixed Problem in 3.5.1-Linux

Number	Description
18207	When Linux hosts were running Xsigo V3.5.0 host drivers, each HA vNIC created through Fabric Manager would spawn 4 interfaces on a Linux host when the vNICs got pushed to the host. The 4 interfaces were visible on the host when displaying interfaces (**`ifconfig`**), but not from Fabric Manager. This problem did not occur when creating HA vNICs through the XgOS CLI. This problem is fixed in host driver version 3.5.1-LX

Technical Support Contact Information

Xsigo Systems is a wholly owned subsidiary of Oracle. Xsigo Customer Support Services is willing to help solve any reported issues 24 hours a day, 7 days a week, 365 days a year. The Xsigo Technical Assistance Center (TAC) is open 9:00 a.m. to 6:00 p.m. PST Monday through Friday. If you need assistance, you can contact the Xsigo Technical Assistance Center (TAC) in any of the following ways:

- Email

  You can send an email to Xsigo at *support@xsigo.com* and we will respond within 24 hours (Monday through Friday).

- Web Access

  You can create a Service Request through the Support Web interface (http://support.xsigo.com/) and we will respond within 24 hours (Monday through Friday). If you do not have a login we will provide you with access to create, view, update and close Service Requests. You can also open RMA cases via the Web.

- Phone Contact

  If you require a faster response for any reason, Xsigo provides response to all phone calls in a maximum of 30 minutes (24 hours a day, 7 days a week, 365 days a year).

  — You can reach us through the Xsigo switchboard by dialing +1 408-329-5600 and selecting option “2”

  — You can reach us through a direct line, by dialing +1 408-736-3013 (24 hours a day, 7 days a week)

  — For our US customers, you can call us through our toll-free number, by dialing 866-974-4647

Gathering Information for Xsigo Technical Support — Linux

If the Xsigo Fabric Director is supporting Linux servers and problems are encountered, please gather the information in the following section before contacting Xsigo Technical Support or filing a case through the support website.

On the Xsigo Fabric Director

- Type and number of servers connected (brand, model, number of CPUs, size and type of memory)
- Output from the **`get-log-files -all`** command (for Oracle’s Xsigo Fabric Director), which will gather the **`show tech-support`** information plus all log files, and place information into `xsigo-logs.tar.gz`

On the Host Server

- The file output from **/opt/xsigo/bin/xsigo-support -o** <filename>